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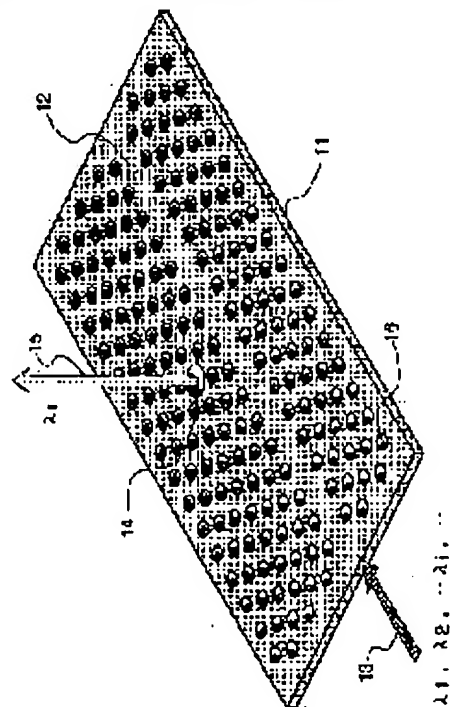
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(54) TWO-DIMENSIONAL PHOTONIC CRYSTAL WAVEGUIDE AND WAVELENGTH BRANCHING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an effective form for forming opto-electromagnetic wave waveguides and an opto-electromagnetic wave multiplexer/demultiplexer for introducing or inputting the opto-electromagnetic waves propagating in two-dimensional photonic crystal waveguides to a plane perpendicular direction.

SOLUTION: The two-dimensional photonic crystal waveguide has the photonic crystal waveguides which have a two-dimensional photonic crystal structure formed with a refractive index distribution by periodically arraying materials having the refractive index lower than the refractive index of a slab 11 formed of a material having the refractive index higher than the refractive index of air on the slab material and are formed with wire-shaped defects 12 in the periodic array of the photonic crystals and in which the wire-shaped defects 12 function as the waveguides. The two-dimensional photonic crystal waveguide has at least one dotted defects 14 which disturb the periodic array of the photonic crystals adjacently to the photonic crystal waveguides. The dotted defects 14 function as opto-electromagnetic wave taking-out/ introducing port for capturing and radiating the opto-electromagnetic waves of specific wavelengths among the opto-electromagnetic waves propagating in the waveguides or capturing the opto-electromagnetic waves of the specific wavelengths from the outside and introducing the same into the waveguides.



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